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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

PATENT APPLICATION

ATTORNEY DOCKET NO. 10992292-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Gregg S. Goyins et al.	**Confirmation No.:** 6980
Application No.: 09/497,021	**Examiner:** K. M. Nguyen
Filing Date: February 1, 2000	**Group Art Unit:** 2629

Title: HIGH PERFORMANCE SWITCHABLE POLARIZERS FOR OPTICAL PROJECTION DISPLAYS AND CIRCUITS FOR DRIVING THE POLARIZERS

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 08-03-2006.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month $120	☐ 2nd Month $450	☐ 3rd Month $1020	☐ 4th Month $1590

☐ The extension fee has already been filed in this application.

☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of $ 500. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

☒ I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage, as Express Mail Label No. EV568266172US in an envelope addressed to: MS Appeal Brief - Patents, Commissioner for Patents, Alexandria, VA 22313-1450.

Date of Deposit: October 3, 2006

Typed Name: Susan Bloomfield

Signature: Susan Bloomfield

Respectfully submitted,

Gregg S. Goyins et al.

By _____

Jody C. Bishop

Attorney/Agent for Applicant(s)

Reg No.: 44,034

Date: October 3, 2006

Telephone: (214) 855-8007

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Docket No.: 10992292-1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Gregg S. Goyins et al.

Application No.: 09/497,021 | Confirmation No.: 6980

Filed: February 1, 2000 | Art Unit: 2629

For: HIGH PERFORMANCE SWITCHABLE POLARIZERS FOR OPTICAL PROJECTION DISPLAYS AND CIRCUITS FOR DRIVING THE POLARIZERS | Examiner: K. M. Nguyen

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SECOND APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on August 3, 2006, and is in furtherance of said Notice of Appeal.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1206:

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

Hewlett-Packard Development Company, L.P., a Limited Partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249, Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 28 claims pending in the application.

B. Current Status of Claims

1. Claims canceled: 0

2. Claims withdrawn from consideration but not canceled: 0

3. Claims pending: 1-28

4. Claims allowed: 0

5. Claims rejected: 1-28

C. Claims On Appeal

The claims on appeal are claims 1-28.

IV. STATUS OF AMENDMENTS

Appellant did not file an Amendment After Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Embodiments of the invention, such as set forth in claim 1, comprise a switchable polarizer (*e.g.*, item 300, FIGURE 3) for optical projection displays including a first electrode (*e.g.*, item 315, FIGURE 3); a second electrode (*e.g.*, item 320, FIGURE 3); and a layer of liquid crystal material (*e.g.*, item 325, FIGURE 3) positioned between the first and second electrodes; wherein the first and second electrodes conduct current to heat the polarizer (*e.g.*, page 8, lines 1-7).

Embodiments of the invention, such as set forth in claim 13, comprise a method of driving a switchable polarizer (*e.g.*, item 300, FIGURE 3) in one of two modes, the switchable polarizer having first and second electrodes (*e.g.*, items 315 and 320, FIGURE 3) and a liquid crystal material (*e.g.*, item 325, FIGURE 3) between the electrodes, wherein during a first driving mode, the electrodes heat the liquid crystal material (*e.g.*, page 9, lines 14-19), while during the second driving mode, the electrodes do not heat the liquid crystal material (*e.g.*, page 9, lines 14-19), the method comprising: drawing equal currents through the first and second electrodes during the first driving mode (*e.g.*, page 8, lines 1-7); and applying a first voltage signal to the first electrode and a second voltage signal to the second

electrode during both the first and second driving modes, the first and second voltage signals sustaining the currents drawn through the first and second electrodes during the first driving mode (*e.g.*, page 9, lines 1-9).

Embodiments of the invention, such as set forth in claim 17, comprise a switchable polarizing apparatus (*e.g.*, item 300, FIGURE 3) for optical projection displays comprising: a first electrode (*e.g.*, item 315, FIGURE 3) for receiving a first driving signal, and a second electrode (*e.g.*, item 320, FIGURE 3) for receiving a second driving signal, wherein the first and second driving signals are different (*e.g.*, page 9, lines 20-23); a layer of liquid crystal material (*e.g.*, item 325, FIGURE 3) positioned between the first and second electrodes; a first current source (*e.g.*, item 405, FIGURE 4) switchably coupled to the first electrode, said first current source for drawing a first current through the first electrode (*e.g.*, page 8, lines 1-7); a second current source (*e.g.*, item 410, FIGURE 4) switchably coupled to the second electrode, said second current source for drawing a second current through the second electrode, said second current being equal in magnitude to the first current (*e.g.*, page 8, lines 2-3); and a buffer circuit (*e.g.*, items 425 and 430, FIGURE 4) coupled to the first and second electrodes, said buffer circuit applying the driving voltage signals to the first and second electrodes, said driving signals sustaining the first and second currents through the electrodes (*e.g.*, page 8, line 20 through page 9, line 13).

Embodiments of the invention, such as set forth in claim 20, comprise a switchable polarizer (*e.g.*, item 300, FIGURE 3) for optical projection displays comprising: a set of electrodes (*e.g.*, items 315 and 320, FIGURE 3) arranged in two layers; and a layer of liquid crystal material (*e.g.*, item 325, FIGURE 3) positioned between the two layers of the set of electrodes; wherein said set of electrodes are operable to control polarization states of said layer of liquid crystal and are operable to conduct sufficient current to control a temperature of said layer of liquid crystal (*e.g.*, page 7, line 17 through page 8, line 7).

Embodiments of the invention, such as set forth in claim 24, comprise a method of operating a liquid crystal polarizer (*e.g.*, item 300, FIGURE 3) comprising: driving a set of electrodes (*e.g.*, items 315 and 320, FIGURE 3) to cause current to flow through said set of electrodes to sufficiently heat a liquid crystal layer (*e.g.*, item 325, FIGURE 3) of said liquid crystal polarizer to control a temperature of said liquid crystal layer (*e.g.*, page 8, lines 1-7),

wherein said set of electrodes is arranged in two layers surrounding said liquid crystal layer (*See e.g.*, FIGURE 3); and driving said set of electrodes to establish an electric field across said layer of liquid crystal to control polarization states of said liquid crystal (*e.g.*, page 7, lines 17-22).

Embodiments of the invention, such as set forth in claim 2, comprise the current passing through the first electrode is equal in magnitude to the current passing through the second electrode (*e.g.*, page 8, lines 2-3). Embodiments of the invention, such as set forth in claim 14, comprise the drawing of currents through the electrodes includes coupling the electrodes to two current sources (*See e.g.*, FIGURE 4).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 11, 20, and 24-28 are rejected under 35 U.S.C. § 102(b) as being anticipated by US 4,799,770 (hereinafter, *Kahn*).

2. Claims 13, 14, and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by US 4,723,835 (hereinafter, *Franklin*).

3. Claims 1-10 and 20-22 are rejected under 35 U.S.C. § 103(a) as being obvious over *Franklin* in view of US 4,692,779 (hereinafter, *Ando*).

4. Claims 15 and 23 are rejected under 35 U.S.C. § 103(a) as being obvious over *Franklin* in view of *Ando* in further view of US 4,603,946 (hereinafter, *Kato*).

5. Claims 17-19 are rejected under 35 U.S.C. § 103(a) as being obvious over *Kahn* in view of *Franklin* in further of *Kato*.

6. Claim 12 is rejected under 35 U.S.C. § 103(a) as being obvious over *Franklin* in view of *Ando* in further view of US 6,130,731 (hereinafter, *Andersson*).

7. Claim 12 is rejected under 35 U.S.C. § 103(a) as being obvious over *Kahn* in view of *Andersson*.

8. Claim 24 is rejected under 35 U.S.C. § 103(a) as being obvious over *Franklin* in view of US 3,963,310 (hereinafter, *Giallorenzi*).

VII. ARGUMENT

A. First Ground of Rejection

Claims 1, 11, 20, and 24-28 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Kahn*. Appellant traverses the rejection.

1. Claims 1 and 11

To anticipate a claim under 35 U.S.C. § 102, a reference must teach every element of the claim. *See Verdegaal Bros. Inc. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Moreover, in order for an applied reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." *See Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913 (Fed. Cir. 1989). Furthermore, in order for a reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, "[t]he elements must be arranged as required by the claim." M.P.E.P. § 2131, *citing In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). As discussed further below, these requirements are not satisfied by the 35 U.S.C. § 102 rejection because *Kahn* does not teach every element of the claims.

Claim 1 defines a switchable polarizer that has a layer of liquid crystal material positioned between the first and second electrodes. *Kahn* does not disclose at least these features arranged as in the claim. The Final Action cites busbars 35-1 and 35-2 of figure 3 to teach the first and second electrodes. Final Action at 3. However, the cited busbars do not teach the claimed electrodes because there is not a layer of liquid material positioned therebetween. Note that figure 2 of *Kahn* is a cross-sectional view of the layers of a liquid crystal cell, and that layer 20 is the liquid crystal material, and that layer 26 is a separate and reflective layer in the cell. *See Kahn* at Col. 3, line 62 through Col. 4, line 14. Note also that busbars 35-1 and 35-2 are part of reflective layer 26—a layer separate from liquid crystal layer 20. *See id.* at Col. 5, line 36 through Col. 6, line 7. In fact, figure 3 is a sectional view of the cell taken along line 3-3 of figure 2, thereby depicting busbars in a layer above the liquid crystal layer. In other words, the busbars are parallel line segments that are coplanar in

a plane separate from the plane defined by layer 20. Accordingly, *Kahn* does not teach at least "a layer of liquid crystal material positioned between the first and second electrodes," as recited by claim 1 because the spatial relationship shown in *Kahn* is different. Therefore, Appellant respectfully asserts that for the above reasons claim 1 is patentable over the 35 U.S.C. § 102 rejection of record.

In the Response to Arguments section of the Final Action, the Examiner spends an entire page discussing inherency. *See* Final Action at 17-18. However, to prove anticipation, the Examiner must show that all of the elements in claim 1 are taught in the cited art and arranged as claimed. *See Verdegaal Bros.*, 2 U.S.P.Q.2d 1051 at 1053 and *Bond*, 15 U.S.P.Q.2d at 1567. As explained above, the Examiner has not proven this with regard to *Kahn*. Then the Examiner states that the only difference between the claims and the cited art is in functional language. While not entirely clear, it is believed that the Examiner is alleging that the difference between claim 1 and the cited art is merely a function inherent in the cited art. However, it should be noted that a "switchable polarizer for optical projection displays, ... comprising: a first electrode having a first set of contacts; a second electrode having a second set of contacts; and a layer of liquid crystal material positioned between the first and second electrodes," as recited by claim 1 (and used to distinguish claim 1 in the argument above), is not functional language. Instead, it recites structural features and the arrangements thereof. The Examiner's assertion of functional language and inherency is misplaced, unfounded, and unsupportable.

The Examiner further provides an entire page of discussion on the operation of LCD devices, but does not address the structural relationship between the claimed liquid crystal material and the first and second electrodes noted above. *See* Final Action at 19-20. Appellant does not admit that the Examiner's general discussion about LCD devices is correct. Instead, Appellant prefers to focus on the differences between the claimed polarizer and the system of the applied prior art. Before ending the discussion about LCD operation, the Examiner states:

> Furthermore, examiner respectfully submits that Appellant has argued the well-known switchable polarizer for LCD device like the same in the background of invention. Therefore, Appellant's argument is not moot, and is not a person ordinary skill in the LCD art.

Id. at 20. To the best of Appellant's understanding, it is believed that the Examiner alleges that the structural arrangement described above cannot be relied upon for patentability because it is admitted prior art. Appellant does not agree, but instead, observes that whether or not some structures are admitted as prior art because it not germane to the rejection. Rather, Appellant notes that this is an anticipation rejection, and the Examiner must find all of the claimed features in *Kahn*, either expressly or inherently. The Examiner has failed to do so, and as a result, the rejection must fail.

Still further, the Examiner states that no weight is given to the preamble of claim 1. While Appellant notes Examiner's position is incorrect, Appellant also noted that whether the Examiner gives weight to the preamble is irrelevant to the current rejection because the arrangement of the first and second electrodes and the layer of liquid crystal material is not recited in the preamble.

Lastly, the Examiner reiterates the rejection's citation of liquid crystal molecules 20-1 and busbars 35-1 and 35-2 of *Kahn*. However, this provides no new insight to the issue and fails to clarify how *Kahn* teaches the above-recited features of the claim.

Dependent claim 11 depends from independent claim 1 and, thus, inherits all of the limitations of independent claim 1. Thus, the cited combination does not teach all claim limitations of claim 11. It is respectfully submitted that dependent claim 11 is allowable at least because of its dependence from claim 1 for the reasons discussed above. Accordingly, Appellant respectfully requests the reversal of the 35 U.S.C. § 102 rejection of claims 1 and 11.

2. Claim 20

Claim 20 recites, in part, "a layer of liquid crystal material positioned between the two layers of the set of electrodes." *Kahn* does not disclose at least this limitation. The Final Action cites busbars 35-1 and 35-2 of figure 3 to teach the two layers of the set of electrodes. Final Action at 3. However, the cited busbars do not teach the claimed electrodes because there is not a layer of liquid material positioned therebetween. Note that figure 2 is a cross-sectional view of the layers of a liquid crystal cell, and that layer 20 is the liquid crystal material, and that layer 26 is a separate and reflective layer in the cell. *See Kahn* at Col. 3,

line 62 through Col. 4, line 14. Note also that busbars 35-1 and 35-2 are part of reflective layer 26—a layer separate from liquid crystal layer 20. *See id.* at Col. 5, line 36 through Col. 6, line 7. In fact, figure 3 is a sectional view of the cell taken along line 3-3 of figure 2, thereby depicting busbars in a layer above the liquid crystal layer. In other words, the busbars are parallel line segments that are coplanar in a plane separate from the plane defined by layer 20. Accordingly, *Kahn* does not teach at least "a layer of liquid crystal material positioned between the two layers of the set of electrodes," as recited by claim 20 because the spatial relationship shown in *Kahn* is different. Therefore, Appellant respectfully asserts that for the above reasons claim 20 is patentable over the 35 U.S.C. § 102 rejection of record. Reversal of the rejection is respectfully requested.

3. Claims 24-28

Claim 24 recites, in part, "wherein said set of electrodes is arranged in two layers surrounding said liquid crystal layer." *Kahn* does not disclose at least this limitation. It appears that the Final Action cites busbars 35-1 and 35-2 of figure 3 to teach the two layers of the set of electrodes. Final Action at 3. However, the cited busbars do not teach the claimed electrodes because they are not arranged in two layers surrounding the liquid crystal layer. Note that figure 2 is a cross-sectional view of the layers of a liquid crystal cell, and that layer 20 is the liquid crystal material, and that layer 26 is a separate and reflective layer in the cell. *See Kahn* at Col. 3, line 62 through Col. 4, line 14. Note also that busbars 35-1 and 35-2 are part of reflective layer 26—a layer separate from liquid crystal layer 20. *See id.* at Col. 5, line 36 through Col. 6, line 7. In fact, figure 3 is a sectional view of the cell taken along line 3-3 of figure 2, thereby depicting busbars in a layer above the liquid crystal layer. In other words, the busbars are parallel line segments that are coplanar in a plane separate from the plane defined by layer 20. Accordingly, *Kahn* does not teach at least "wherein said set of electrodes is arranged in two layers surrounding said liquid crystal layer," as recited by claim 24 because the arrangement in *Kahn* is different. Therefore, Appellant respectfully asserts that for the above reasons claim 24 is patentable over the 35 U.S.C. § 102 rejection of record.

Dependent claims 25-28 each depend either directly or indirectly from independent claim 24 and, thus, inherit all of the limitations of independent claim 24. Thus, *Kahn* does not teach all claim limitations of claims 25-28. It is respectfully submitted that dependent

claims 25-28 are allowable at least because of their dependence from claim 24 for the reasons discussed above. Accordingly, Appellant respectfully requests the reversal of the 35 U.S.C. § 102 rejection of claims 24-28.

B. Second Ground of Rejection

Claims 13, 14, and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Franklin*. Appellant traverses the rejection.

1. Claims 13 and 16

Franklin does not teach all features of claim 13. For instance, claim 13 recites, in part, "wherein during a first driving mode, the electrodes heat the liquid crystal material, while during the second driving mode, the electrodes do not heat the liquid crystal material." *Franklin* does not teach at least this feature of claim 13 because the modes, as cited by the Examiner, do not include one mode wherein electrodes heat the liquid crystal material and an additional mode wherein the electrodes do not heat the liquid crystal material. Specifically, *Franklin* does not teach that the first mode (as cited by the Examiner) includes electrodes heating the liquid crystal material, nor that the electrodes do not heat the liquid crystal material in the second mode (as cited by the Examiner).

The Examiner cites modes of *Franklin* as switch 31 open and switch 31 closed (figures 2 and 3 of *Franklin*). Final Action at 5-6. It appears that the Examiner cites items 13 and 17 (figures 2 and 3 of *Franklin*) as the electrodes and LCD fluid 15 as liquid crystal material. The Examiner further cites the switch-closed mode to show electrodes heating the liquid crystal layer and cites the switch-open mode to show electrodes not heating the liquid crystal layer. *Id.* However, *Franklin* does not teach that electrodes 13 and 17 either heat or do not heat LCD fluid 15. The cited passage at column 4, lines 14-21, merely teaches that applying an AC potential across the electrodes can cause a reorientation of the LCD fluid molecules. In fact, it appears that the only heating that *Franklin* mentions is by the heater (*e.g.*, item 19 figure 4). Teaching applying an AC voltage and causing reorientation of molecules is not enough, without more, to teach one mode wherein electrodes heat the liquid crystal material and an additional mode wherein the electrodes do not heat the liquid crystal material. Accordingly, *Franklin* does not teach the above-recited feature of claim 13.

Further, claim 13 recites, in part, "drawing equal currents through the first and second electrodes during the first driving mode." *Franklin* does not teach at least this feature of claim 13 because it does not teach equal currents. The Examiner cites the passage at column 2, lines 53-56, to teach equal currents through the first and second electrodes. Final Action at 6. However, the cited passage teaches that the currents are not equal. Specifically, the cited passage states:

> The current path provided by the fixed potential connected to the heater is principly [sic] through the rear LCD electrodes and therefore the alternating currents across the rear electrode capacitor and the front electrode capacitor flowing through the fixed potential connection are different. (Emphasis added)

Franklin at Col. 2, lines 48-53. Thus, the cited passage teaches different currents rather than equal currents. Accordingly, *Franklin* does not teach the above-recited feature of claim 13.

Dependent claim 16 depends from independent claim 13 and, thus, inherits all of the limitations of independent claim 13. Thus, the cited combination does not teach or suggest all claim limitations of claim 16. It is respectfully submitted that dependent claim 16 is allowable at least because of its dependence from claim 13 for the reasons discussed above. Accordingly, Appellant respectfully requests the reversal of the 35 U.S.C. § 102 rejection of claims 13 and 16.

2. Claim 14

Dependent claim 14 recites, in part, "the drawing of currents through the electrodes includes coupling the electrodes to two current sources." *Franklin* does not teach at least this feature of claim 14 because it does not teach two current sources. The Examiner cites the different currents in the rear electrode capacitor and the front electrode capacitor (*Franklin* at Col. 2, lines 48-53) to show two current sources. Final Action at 6-7. (Note the inconsistency between the rejection of claim 13, wherein the Examiner asserts that the currents are equal, and the rejection of claim 14, wherein the Examiner asserts that the currents are different.) The Examiner assumes that two currents necessarily mean two current sources, but this is incorrect. In the cited currents of *Franklin*, the different currents are due to different paths, and the currents originate in the fixed potential connected to the heater. *See Franklin* at Col. 2, lines 48-53. Accordingly, the heater is the current source for

both currents (and for the net DC current flow at lines 53-56 also). Thus, there is one current source taught by *Franklin*. For at least this reason, *Franklin* does not teach "the drawing of currents through the electrodes includes coupling the electrodes to two current sources," as recited in claim 14. Appellant respectfully requests the reversal of the 35 U.S.C. § 102 rejection of claim 14.

C. Third Ground of Rejection

Claims 1-10 and 20-22 are rejected under 35 U.S.C. § 103(a) as being obvious over *Franklin* in view of *Ando*. Appellant traverses the rejection.

To show obviousness under 35 U.S.C. § 103(a), three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the applied reference. *See In re Vaeck* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. *In re Merck and Co., Inc.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Finally, the applied reference must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Without conceding any other criteria, Appellant respectfully asserts that the rejection does not satisfy the third criterion, as discussed further below.

1. Claims 1 and 5-10

Claim 1 recites, in part, that the first electrode has a first set of contacts and that the second electrode has a second set of contacts, "wherein the first electrode conducts current between said first set of contacts to heat the polarizer, and wherein the second electrode conducts current between said second set of contacts to heat the polarizer." *Franklin* does not teach or suggest at least this feature of claim 1. The current cited by the Examiner is discussed at column 2, lines 17-24 of *Franklin*, and it flows between the LCD electrodes (*e.g.*, items 13 and 17 of figures 2 and 3) and the heater (*e.g.*, item 19 of figure 1) power or ground. *See also Franklin* at Col. 5, lines 17-23 and Col. 2, lines 5-24. Each of the front and rear electrodes forms a capacitor with the heater and with each other. *Id.* at Col. 2, lines 42-48. The current path is through the capacitors formed by the electrodes and back to the heater fixed potential, and *Franklin* does not teach that such current is conducted between more than

one contact of each electrode. *See id.* at lines 48-53. Unfortunately, *Franklin* does not illustrate the currents at issue, but a capacitor is illustrated in figures 2 and 3 of *Franklin*, with electrodes 13 and 17 being the plates of the capacitor each connected by only one contact to voltage source 30. Thus, neither of electrodes 13 and 17 has a set of contacts wherein the electrode conducts current between the contacts, because the only current taught by *Franklin* flows from the electrodes to the heater and does not use a set of contacts in either electrode. Accordingly, the above-recited feature of claim 1 is not taught or suggested by *Franklin*, nor does *Ando* teach or suggest the feature.

In the Response to Arguments Section, the Examiner states:

> As stated supra with respect to claims 1, 20 and 24, Appellant argues the features in the amended claim 1 that are newly recited, see the rejection of paragraph 18 above. Thus. a new ground of rejection for claim 1 including claims 20 and 24 have been moot. It is noted that a current claimed invention of claims 1,20, and 24 are equivalent to the scope of conventional invention as disclosed by *Franklin* in the background of his invention. Therefore, the current claimed invention is inherent from the well known in the LCD art, and there is no improvement.

Final Action at 22. To the best of Appellant's understanding, it is believed that the above-recited passage from the Final Action is trying to assert that the Background of the Invention section of *Franklin* discloses many of the features of claim 1. However, Appellant showed above that *Franklin*, indeed, does not teach or suggest all features of claim 1. Therefore, Appellant respectfully asserts that for the above reasons claim 1 is patentable over the 35 U.S.C. § 103 rejection of record.

Dependent claims 5-10 each depend either directly or indirectly from independent claim 1 and, thus, inherit all of the limitations of independent claim 1. Thus, the cited combination does not teach or suggest all claim limitations of claims 5-10. It is respectfully submitted that dependent claims 5-10 are allowable at least because of their dependence from claim 1 for the reasons discussed above. Accordingly, Appellant respectfully requests the reversal of the 35 U.S.C. § 103 rejection of claims 1 and 5-10.

2. Claims 2-4

Dependent claim 2 recites, in part, "the current passing through the first electrode is equal in magnitude to the current passing through the second electrode." The cited combination of *Franklin* and *Ando* fails to teach or suggest the above-recited feature because the combination does not teach or suggest currents equal in magnitude. The Examiner does not rely on *Ando* to teach or suggest the feature, nor does *Ando* teach or suggest the feature. Instead, the Examiner relies on *Franklin* at Col. 2. lines 17-24, which mentions an "average DC current" that flows between the heater (19 of figure 1) and the electrodes (13 and 17 of figure 1). Final Action at 9. However, this is only one current, and the Examiner does not assert that this current in equal in magnitude to another current. Instead, the Examiner asserts that the average DC current is "constant," which is not relevant to the above-recited feature. It should also be noted that *Franklin* mentions other currents (the currents in each of the electrodes), but such currents are not equal. *See Franklin* at Col. 2, lines 48-53. Therefore, *Franklin*, and the combination as a whole, does not teach or suggest "the current passing through the first electrode is equal in magnitude to the current passing through the second electrode," as recited by claim 2.

Dependent claims 3 and 4 each depend either directly or indirectly from independent claim 1 and, thus, inherit all of the limitations of independent claim 1. Thus, the cited combination does not teach or suggest all claim limitations of claims 3 and 4. It is respectfully submitted that dependent claims 3 and 4 are allowable at least because of their dependence from claim 1 for the reasons discussed above. Accordingly, Appellant respectfully requests the reversal of the 35 U.S.C. § 103 rejection of claims 2-4.

3. Claims 20-22

Claim 20 recites, in part, "wherein said set of electrodes ... are operable to conduct sufficient current to control a temperature of said layer of liquid crystal." *Franklin* does not teach or suggest this feature of claim 20 because *Franklin* teaches striving for zero current. It appears that the Final Action cites current in the *Franklin* system between the LCD electrodes and the heater to teach or suggest the above-recited feature of claim 20; however, such assertion is incorrect. *See* Final Action at 8. *Franklin* teaches that the DC component (i.e., the cited current) between the LCD electrodes should be as close to zero as possible to avoid

damaging the LCD from electroplating. *Franklin* at Col. 5, lines 1-23. In fact, one of the advantages of the *Franklin* system is that it can limit the current to as low as 250 mA or less. *Id* at Col. 7, lines 53-58. However, *Franklin* does not teach or suggest that the amount of the current is sufficient current to control a temperature of a layer of liquid crystal. Accordingly, the above-recited feature of claim 20 is not taught or suggested by *Franklin*. The Final Action does not rely on *Ando* to teach or suggest the feature, nor does *Ando* teach or suggest the feature. Therefore, Appellant respectfully asserts that for the above reasons claim 20 is patentable over the 35 U.S.C. § 103 rejection of record.

Dependent claims 21 and 22 each depend either directly or indirectly from independent claim 20 and, thus, inherit all of the limitations of independent claim 20. Thus, the cited combination does not teach or suggest all claim limitations of claims 21 and 22. It is respectfully submitted that dependent claims 21 and 22 are allowable at least because of their dependence from claim 20 for the reasons discussed above. Accordingly, Appellant respectfully requests the reversal of the 35 U.S.C. § 103 rejection of claims 20-22.

D. Fourth Ground of Rejection

Claims 15 and 23 are rejected under 35 U.S.C. §103(a) as being obvious over *Franklin* in view of *Ando* in further view of *Kato*. Appellant traverses the rejection.

Claims 15 and 23 depend from base claims 13 and 20, respectively, and thus inherit all limitations of their respective base claims. As shown above, *Franklin* does not teach every feature of base claim 13, and the combination of *Franklin* and *Ando* does not teach or suggest every feature of base claim 20. The Examiner does not rely on *Ando* or *Kato* to teach or suggest the features that were shown to be missing from *Franklin*. Thus, the combination of *Franklin*, *Ando*, and *Kato* does not teach or suggest all features of claims 15 and 23. Thus, Appellant respectfully asserts that for the above reasons claims 15 and 23 are patentable over the 35 U.S.C. § 103(a) rejection of record.

E. Fifth Ground of Rejection

Claims 17-19 are rejected under 35 U.S.C. § 103(a) as being obvious over *Kahn* in view of *Franklin* in further of *Kato*. Appellant traverses the rejection.

1. Lack of motivation to modify references

The Final Action fails to provide the requisite motivation to combine *Kahn* with *Franklin* (and by extension, with *Kato* also). It is well settled that the fact that references can be combined or modified is not sufficient to establish a *prima facie* case of obviousness, M.P.E.P. § 2143.01. The Examiner states:

> The current path provided by the fixed potential connected to the heater is principly through the rear LCD electrodes and therefore the alternating currents across the rear electrode capacitor and the front electrode capacitor flowing through the fixed potential connection are different. This creates an imbalance with respect to the capacitance between the front and the rear LCD electrodes resulting in a net DC current flow, see col. 2, lines 48-56. Thus, there are two current sources, each which connects to each one of electrodes.

Final Action at 13. In other words, the statement asserts that the DC current from the LCD electrodes to the heater teaches or suggests two current sources.

The Examiner further states that the motivation to combine *Franklin* and *Kahn* is as follows:

> It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to implement two current sources as conventionally disclosed by *Franklin* in the LCD device of *Kahn* in order to achieve the benefit of intend to drive the LCD device, because one of ordinary skill in the art would be reasonably apprised of this would supply current values for electrodes of LCD device

Id. In arguing this, the Examiner fails to suggest the desirability for such a modification because *Franklin* teaches that the cited DC current between the LCD electrodes and the heater should be as close to zero as possible. *Franklin* at Col. 5, lines 1-23. This is because the current can damage an LCD device through electroplating, which is undesirable. *Id.* at Col. 2, lines 17-26. Accordingly, modifying the system of *Kahn* to include the DC current of *Franklin* would produce a failure in the resultant display device. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combinations, M.P.E.P. § 2143.01 citing *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). In this case, the cited art does not provide the requisite motivation, and in fact, teaches against the modification.

Further, a proposed modification that would render the prior art system unsatisfactory for its intended purpose lacks suggestion or motivation, and is therefore, improper. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In this case, the proposed modification would ruin the LCD device of *Kahn* by causing electroplating. Thus, the failure to provide motivation suggesting desirability of the modifications is improper. Accordingly, Appellant respectfully submits that the 35 U.S.C. § 103(a) rejection of claims 17-19 fails.

In the Response to Arguments section of the Final Action , the Examiner cites language from claim 17 of the present application and comments that Appellant's argument "is not related to the claimed invention." Final Action at 23. However, there is no need to address the claim language when proving a lack of motivation to combine references. Nevertheless, Appellant addresses the claim language in the section below entitled, "Failure to teach or suggest all claim limitations."

2. Failure to teach or suggest all claim limitations

Claim 17 recites, in part, "a layer of liquid crystal material positioned between the first and second electrodes," The combination of *Kahn*, *Franklin*, and *Kato* fails to teach or suggest at least this feature of claim 17 because it does not teach a layer of liquid crystal material and first and second electrodes arranged as claimed. The Examiner does not rely on *Franklin* or *Kato* to teach or suggest the feature. Rather, the Examiner cites *Kahn*, specifically the busbars (35-1 and 35-2 of figure 3) to teach the claimed electrodes and the liquid crystal layer (20 of figures 2 and 3) to teach or suggest the layer of liquid crystal material. Final Action at 12. However, the cited busbars do not teach the claimed electrodes because there is not a layer of liquid material positioned therebetween. Note that figure 2 of *Kahn* is a cross-sectional view of the layers of a liquid crystal cell, and that layer 20 is the liquid crystal material, and that layer 26 is a separate and reflective layer in the cell. *See also Kahn* at Col. 3, line 62 through Col. 4, line 14. Note also that busbars 35-1 and 35-2 are part of reflective layer 26—a layer separate from liquid crystal layer 20. *See id.* at Col. 5, line 36 through Col. 6, line 7. In fact, figure 3 is a sectional view of the cell taken along line 3-3 of figure 2, thereby depicting busbars in a layer above the liquid crystal layer. In other words, the busbars are parallel line segments that are coplanar in a plane separate from the plane defined by layer 20. Accordingly, the cited combination does not teach at least "a layer of

liquid crystal material positioned between the first and second electrodes," as recited by claim 17. Therefore, the Appellant respectfully asserts that for the above reasons claim 17 is patentable over the 35 U.S.C. § 103 rejection of record.

Claims 18 and 19 depend from base claim 17, and thus inherit all limitations of claim 17. Claim 17 sets forth features and limitations not recited by the combination of *Kahn*, *Franklin*, and *Kato*. Thus, the Appellants respectfully assert that for the above reasons claims 18 and 19 are patentable over the 35 U.S.C. § 103(a) rejection of record.

F. Sixth Ground of Rejection

Claim 12 is rejected under 35 U.S.C. § 103(a) as being obvious over *Franklin* in view of *Ando* in further view of *Andersson*. Appellant traverses the rejection.

Claim 12 depends from base claim 1, and thus inherits all limitations of claim 1. As shown above, the combination of *Franklin* and *Ando* does not teach every feature of base claim 1. The Examiner does not rely on *Andersson* to teach or suggest the features that were shown to be missing from *Franklin* and *Ando*. Thus, the combination of *Franklin*, *Ando*, and *Andersson* does not teach or suggest all features of claim 12.

In the Response to Arguments section of the Final Action, the Examiner points out that claim 12 does not depend from claim 10. Final Action at 23. In the remarks of the Appellant's last response, Appellant had mistakenly used "claim 10" rather than "claim 1" when discussion the relationship between claim 12 and its respective independent claim. This is merely a typographical error. Appellant apologizes for any confusion and has corrected the error for this Brief.

G. Seventh Ground of Rejection

Claim 12 is rejected under 35 U.S.C. § 103(a) as being obvious over *Kahn* in view of *Andersson*. Appellant traverses the rejection.

As shown above, *Kahn* does not teach every feature of claim 10. The Examiner does not rely on *Andersson* to teach or suggest the features that were shown to be missing from *Kahn*. Thus, the combination of *Kahn* and *Andersson* does not teach or suggest all features of

claim 12. Therefore, Appellant respectfully asserts that for the above reasons claim 12 patentable over the 35 U.S.C. § 103(a) rejections of record.

H. Eighth Ground of Rejection

Claim 24 is rejected under 35 U.S.C. § 103(a) as being obvious over *Franklin* in view of *Giallorenzi*. Appellant traverses the rejection.

1. Lack of motivation to modify references

The Examiner fails to provide the requisite motivation to combine *Franklin* with *Giallorenzi*. It is well settled that the fact that references can be combined or modified is not sufficient to establish a *prima facie* case of obviousness, M.P.E.P. § 2143.01. On page 16 of the Final Action, the Examiner proposes to modify the system of *Franklin* to include producing an electric field between the electrodes. The Examiner further states:

> It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to implement the electrical current produces an electric-field between the electrodes as taught by Giallozenri in the LCD device of *Franklin* in order to achieve the benefit of intend to drive the LCD device, because this would change the index of refraction and which causes the liquid-crystal molecules 23 to align with the electric field (see Giallozenri, col. 7, lines 47-49).

Final Action at 16. However, *Franklin* already provides a mechanism to produce an electric field between the electrodes (13 and 17 of figures 2 and 3 of *Franklin*). *See* the discussion in *Franklin* at column 4, lines 3-21. Accordingly, one of ordinary skill in the art would not be motivated to look to *Giallorenzi* to modify *Franklin*, contrary to the Examiner's assertions, since *Franklin* provides such mechanism without modification. In effect, the Examiner's assertion is merely a statement that the references can be modified, and does not provide any real desirability for making the modifications. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combinations, M.P.E.P. § 2143.01 citing *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). Accordingly, Appellant respectfully submits that the 35 U.S.C. § 103(a) rejection of claim 24 fails.

2. Failure to teach or suggest all claim limitations

Claim 24 recites, in part, "driving a set of electrodes to cause current to flow through said set of electrodes to sufficiently heat a liquid crystal layer of said liquid crystal polarizer to control a temperature of said liquid crystal layer." *Franklin* does not teach or suggest this feature of claim 24 because *Franklin* teaches striving for zero current. It is believed that the Examiner cites current in the *Franklin* system between the LCD electrodes and the heater to teach or suggest the above-recited feature of claim 24; however, such assertion is incorrect. *Franklin* teaches that the DC component (i.e., the cited current) between the LCD electrodes should be as close to zero as possible to avoid damaging the LCD from electroplating. *Franklin* at Col. 5, lines 1-23. In fact, one of the advantages of the *Franklin* system is that it can limit the current to as low as 250 mA or less. Col. 7, lines 53-58. *Franklin* does not teach or suggest that the amount of the current can sufficiently heat a liquid crystal layer ... to control a temperature of said liquid crystal layer. Accordingly, the above-recited feature of claim 24 is not taught or suggested by *Franklin*. The Examiner does not rely on *Giallorenzi* to teach or suggest the feature, nor does *Giallorenzi* teach or suggest the feature. Therefore, Appellant respectfully asserts that for the above reasons claim 24 is patentable over the 35 U.S.C. § 103 rejection of record.

In the Response to Arguments section of the Final Action, the Examiner states that Appellant's arguments do not comply with 37 CFR 1.111(b) because "they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references." Final Action at 25. However, Appellant has distinctly and specifically shown, in previous responses and herein, that the references cannot be combined and that the combination does not teach or suggest all claimed limitations, thereby complying with Rule 111.

VIII. CLAIMS APPENDIX

A copy of the claims involved in the present appeal is attached hereto as Appendix A.

IX. EVIDENCE APPENDIX

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted in Appendix B.

X. RELATED PROCEEDINGS APPENDIX

No related proceedings are referenced in II. above; hence, no copies of decisions in related proceedings are provided in Appendix C.

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV568266172US, in an envelope addressed to: MS Appeal Brief-Patents, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Date of Deposit: October 3, 2006

Typed Name: Susan Bloomfield

Signature: Susan Bloomfield

Respectfully submitted,

By _____
Jody C. Bishop
Attorney/Agent for Applicant(s)
Reg. No.: 44,034

Date: October 3, 2006

Telephone No. (214) 855-8007

APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/497,021

1. A switchable polarizer for optical projection displays, said comprising:

a first electrode having a first set of contacts;

a second electrode having a second set of contacts; and

a layer of liquid crystal material positioned between the first and second electrodes;

wherein the first electrode conducts current between said first set of contacts to heat the polarizer, and wherein the second electrode conducts current between said second set of contacts to heat the polarizer.

2. The switchable polarizer of claim 1, wherein the current passing through the first electrode is equal in magnitude to the current passing through the second electrode.

3. The switchable polarizer of claim 2, wherein the currents passing through the first and second electrodes are constant.

4. The switchable polarizer of claim 2, wherein during a heating operation, the first and second electrodes apply a uniform electric field across the liquid crystal material.

5. The switchable polarizer of claim l, wherein no current passes through the first and second electrodes when the electrodes are not heating the polarizer.

6. The switchable polarizer of claim 1, wherein during a non-heating operation of the polarizer, no current passes through either electrode, and the first electrode is at a first potential and the second electrode is at a second potential different from the first potential.

7. The switchable polarizer of claim 1, wherein the first and second electrodes are transparent electrodes.

8. The switchable polarizer of claim 1, wherein the first electrode receives a first voltage signal and the second electrode receives a second voltage signal.

9. The switchable polarizer of claim 8, wherein the first and second voltage signals are alternating signals.

10. The switchable polarizer of claim 9, wherein the first and second voltage signals are symmetrically opposite bipolar signals.

11. The switchable polarizer of claim 1, wherein the polarizer serves as a polarization compensator in an optical projection display.

12. The switchable polarizer of claim l, wherein the polarizer is a polarizing switch of an electronic color switch.

13. A method of driving a switchable polarizer in one of two modes, the switchable polarizer having first and second electrodes and a liquid crystal material between the electrodes, wherein during a first driving mode, the electrodes heat the liquid crystal material, while during the second driving mode, the electrodes do not heat the liquid crystal material, said method comprising:

drawing equal currents through the first and second electrodes during the first driving mode; and

applying a first voltage signal to the first electrode and a second voltage signal to the second electrode during both the first and second driving modes, the first and second voltage signals sustaining the currents drawn through the first and second electrodes during the first driving mode.

14. The method of claim 13, wherein the drawing of currents through the electrodes includes coupling the electrodes to two current sources.

15. The method of claim 14, wherein the applying of the voltage signals to the electrodes includes coupling each electrode to an output of an amplifier.

16. The method of claim 14, wherein the applying of the voltage signals to the electrodes includes applying first and second voltage signals that are alternating signals.

17. A switchable polarizing apparatus for optical projection displays, said apparatus comprising:

a first electrode for receiving a first driving signal, and a second electrode for receiving a second driving signal, wherein the first and second driving signals are different;

a layer of liquid crystal material positioned between the first and second electrodes;

a first current source switchably coupled to the first electrode, said first current source for drawing a first current through the first electrode;

a second current source switchably coupled to the second electrode, said second current source for drawing a second current through the second electrode, said second current being equal in magnitude to the first current; and

a buffer circuit coupled to the first and second electrodes, said buffer circuit applying the driving voltage signals to the first and second electrodes, said driving signals sustaining the first and second currents through the electrodes.

18. The apparatus of claim 17, wherein the buffer circuit includes a programmable gain amplifier for each electrode, each amplifier applying the driving voltage signal to its corresponding electrode.

19. The apparatus of claim 17, wherein each programmable gain amplifier receives a polarization drive signal and a reference voltage signal, the reference voltage signal determining the magnitude of the driving voltage signal applied by the amplifier, and the polarization drive signal determining the polarity of the driving voltage signal applied by the amplifier.

20. A switchable polarizer for optical projection displays, comprising:

a set of electrodes arranged in two layers; and

a layer of liquid crystal material positioned between the two layers of the set of electrodes;

wherein said set of electrodes are operable to control polarization states of said layer of liquid crystal and are operable to conduct sufficient current to control a temperature of said layer of liquid crystal.

21. The switchable polarizer of claim 20 wherein each of said set of electrodes includes a respective first contact and a respective second contact.

22. The switchable polarizer of claim 20 further comprising:

a set of switches that selectively enable current to flow through said set of electrodes.

23. The switchable polarizer of claim 20 further comprising:

a set of amplifiers that supply current to said set of electrodes.

24. A method of operating a liquid crystal polarizer, comprising:

driving a set of electrodes to cause current to flow through said set of electrodes to sufficiently heat a liquid crystal layer of said liquid crystal polarizer to control a temperature of said liquid crystal layer, wherein said set of electrodes is arranged in two layers surrounding said liquid crystal layer; and

driving said set of electrodes to establish an electric field across said layer of liquid crystal to control polarization states of said liquid crystal.

25. The method of claim 24 wherein said driving said set of electrodes to cause current to flow and said driving said set of electrodes to establish an electric field occur simultaneously.

26. The method of claim 24 wherein said driving said set of electrodes to cause current to flow and said driving said set of electrodes to establish an electric field occur in different operational modes.

27. The method of claim 24 wherein said driving said set of electrodes to cause current to flow includes:

engaging a plurality of switches coupled to said set of electrodes.

28. The method of claim 24 wherein said driving said set of electrodes to cause current to flow applies symmetric bipolar signals to drive said first set of electrodes to a positive potential and to drive said second set of electrodes to a negative potential.

APPENDIX B

Evidence: None.

APPENDIX C

Related Proceedings: None.